REMARKS / ARGUMENTS

Claims 25-30 remain pending in this application. No claims have been canceled or added. Claims 21-23 have been withdrawn.

Priority

Applicants appreciate the Examiner's acknowledgment of the claim for priority and safe receipt of the priority document.

35 U.S.C. §§102 and 103

Claims 25-29 stand rejected under 35 U.S.C. §102(e) as being anticipated by Hoekstra et al (U.S. Patent No. 6,211,488). Claim 30 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Hoekstra et al. These rejections are traversed as follows.

According to the presently claimed method, the liquid crystal display apparatus has a glass substrate with a top surface and a bottom surface and a scribe groove is formed in the top surface thereof. The scribe groove extends for the entire length of the glass substrate. The method includes the steps of simultaneously heating entire areas spaced from the scribe groove and extending for the entire length of the scribe groove, and cutting the glass substrate using the tensile strength generated along the entire length of the scribe groove. None of the cited references disclose these features of the presently claimed invention.

Hoekstra et al disclose a substrate 4 mounted below a splitting device 20. As stated at column 4, beginning at line 32, the substrate differential between the heat effected zone of the substrate and the coolant stream propagates the initiated microcrack along the substrate. Two breaking laser beams, each laterally displaced from the microcrack on opposite sides, immediately follow the coolant stream to create controlled tensile forces sufficient to extend the crack to the bottom surface of the substrate, thereby dividing the substrate along the path of the microcrack.

The Examiner's attention is directed to Figs. 3 and 5 of Hoekstra et al. The heat effected zone caused by the scribe beam 42 and the coolant stream from the nozzle 102 following the scribe beam 42 run along separation line 45 to form the initiated microcrack. Breaking laser beams 46 and 48 on opposite sides of the separation line 45 follow after the coolant stream in order to create sufficient tensile forces around the microcrack. Therefore, the initiated microcrack does not need to be formed before heating the substrate along both sides of the separation line. Hoekstra et al disclose that the microcrack is extended across the thickness direction of the substrate as soon as it is formed due to the temperature differential along the separation line 45.

On the other hand, if both sides of the separation line 45, of Hoekstra et al's structure, were heated across the entire length of the glass substrate, no temperature differential would ever appear along separation line 45 and the initiated microcrack could not be formed. In addition, the tensile stress due to the heat caused by the breaking laser beams 46 and 48 would appear in an undesired area of the separation line 45 where the initiated microcrack has not yet been formed. Such

tensile stress would be excessively applied to the substrate and would adversely affect the formation of the initiated microcrack and cause it to deviate from the separation line 45.

Thus, not only do Hoekstra et al fail to disclose or suggest the presently claimed invention, they seem, in fact, to teach away from the presently claimed invention. As such, the presently claimed method cannot be arrived at from Hoekstra's invention over the cited art.

Request for Interview

Applicants request that the Examiner contact the undersigned by telephone in order to arrange an appropriate time for an interview in order to expedite prosecution of this application.

Conclusion

In view of the foregoing, Applicant respectfully requests that a timely Notice of Allowance be issued in this case.

Respectfully submitted,

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